Test Procedure for §170.306 (a) Computerized Provider Order Entry

This document describes the draft test procedure for evaluating conformance of complete EHRs or EHR modules[1] to the certification criteria defined in 45 CFR Part 170 Subpart C of the Final Rule for Health Information Technology: Initial Set of standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology as published in the Federal Register on July 28, 2010. The document[2] is organized by test procedure and derived test requirements with traceability to the normative certification criteria as described in the Overview document located at http://healthcare.nist.gov/docs/TestProcedureOverview_v1.pdf. The test procedures may be updated to reflect on-going feedback received during the certification activities.

The HHS/Office of the National Coordinator for Health Information Technology (ONC) has defined the standards, implementation guides and certification criteria used in this test procedure. Applicability and interpretation of the standards, implementation guides and certification criteria to EHR technology is determined by ONC. Test procedures to evaluate conformance of EHR technology to ONC's requirements are defined by NIST. Testing of EHR technology is carried out by ONC-Authorized Testing and Certification Bodies (ATCBs), not NIST, as set forth in the final rule establishing the Temporary Certification Program (*Establishment of the Temporary Certification Program for Health Information Technology, 45 CFR Part 170; June 24, 2010*.)

Questions about the applicability of the standards, implementation guides or criteria should be directed to ONC at ONC.Certification@hhs.gov. Questions about the test procedures should be directed to NIST at hit-tst-fdbk@nist.gov. Note that NIST will automatically forward to ONC any questions regarding the applicability of the standards, implementation guides or criteria. Questions about functions and activities of the ATCBs should be directed to ONC at ONC.Certification@hhs.gov .

CERTIFICATION CRITERIA

This Certification Criterion is from the Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology Final Rule issued by the Department of Health and Human Services (HHS) on July 28, 2010.

§170.306 (a) Computerized provider order entry. Enable a user to electronically record, store, retrieve, and modify, at a minimum, the following order types:

(1) Medications;
(2) Laboratory; and
(3) Radiology/Imaging

[1] Department of Health and Human Services, 45 CFR Part 170 Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, Final Rule, July 28, 2010.

[2] Disclaimer: Certain commercial products are identified in this document. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology.

Per Section III.D of the preamble of the Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, Final Rule where the computerized provider order entry certification criterion is discussed:

- "We clarify that the adopted certification criteria related to CPOE pertain only to the ordering, and not to the delivery of results (reports or images)."

INFORMATIVE TEST DESCRIPTION

This section provides an informative description of how the test procedure is organized and conducted. It is not intended to provide normative statements of the certification requirements.

This test evaluates the capability for a complete EHR or EHR Module to enable a user to electronically record, store, modify and retrieve the following order types in an inpatient setting:

(1) Medications;
(2) Laboratory; and
(3) Radiology/Imaging

This test procedure is organized into three sections:

- Record and Store - evaluates the capability to electronically enter and store orders for medications, laboratory, and radiology/imaging within the EHR system in an inpatient setting
  - The Tester enters the NIST-supplied Test Data orders for medications, laboratory, and radiology/imaging
  - The Tester verifies that the orders are stored in the EHR

- Modify - evaluates the capability for a user to electronically modify entered orders for medications, laboratory, and radiology/imaging in an inpatient setting
  - The Tester displays the entered orders for medications, laboratory, and radiology/imaging
  - Tester modifies the medications, laboratory, and radiology/ imaging orders
  - The Tester validates that the modified orders are accurate and complete

- Retrieve - evaluates the capability to retrieve and display the orders that have been previously entered into the EHR in an inpatient setting
  - The Tester displays the orders for medications, laboratory, and radiology/ imaging entered during the test
  - The Tester validates that the displayed order data are accurate and complete

REFERENCED STANDARDS

None

NORMATIVE TEST PROCEDURES

Derived Test Requirements

DTR170.306.a – 1: Electronically Record and Store Orders in an Inpatient Setting

DTR170.306.a – 2: Electronically Modify Orders in an Inpatient Setting

DTR170.306.a – 3: Electronically Retrieve Orders in an Inpatient Setting

DTR170.306.a – 1: Electronically Record and Store Orders in an Inpatient Setting

Required Vendor Information

VE170.306.a – 1.01: Vendor shall identify a patient with an existing record in the EHR to be used for this test

VE170.306.a – 1.02: Vendor shall identify the EHR function(s) that are available to: 1) select the patient, 2) enter and store orders for medications, laboratory, and radiology/imaging, 3) modify orders for medications, laboratory, and radiology/imaging, and 4) retrieve orders for medications, laboratory, and radiology/imaging

Required Test Procedure:

TE170.306.a – 1.01: Tester shall select order data from NIST-supplied Test Data sets

TE170.306.a – 1.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and enter orders for medications, laboratory, and radiology/imaging

TE170.306.a – 1.03: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the orders have been entered correctly and without omission

Inspection Test Guide

IN170.306.a – 1.01: Using the data in the NIST-supplied Test Data set TD170.306.a – 1, Tester shall verify that all of the order data are entered correctly and without omission

IN170.306.a – 1.02: Tester shall verify that the order data are stored in the patient's record for:

- medications
- laboratory
- radiology/imaging

DTR170.306.a – 2: Electronically Modify Orders in an Inpatient Setting

Required Vendor Information

- As defined in DTR170.306.a – 1, no additional information is required

Required Test Procedure:

TE170.306.a – 2.01: Tester shall select order data from NIST-supplied Test Data sets

TE170.306.a – 2.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record, shall display the order data entered during the DTR170.306.a – 1: Electronically Record and Store Orders test, and shall modify the previously entered orders for medications, laboratory, and radiology/imaging

TE170.306.a – 2.03: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the orders that were modified display correctly and without omission

Inspection Test Guide

IN170.306.a – 2.01: Tester shall verify that the medication, laboratory, and radiology/imaging order data entered and stored during the DTR170.306.a – 1: Electronically Record and Store Orders test can be accessed and modified

IN170.306.a – 2.02: Using the data in the NIST-supplied Test Data set TD170.306.a – 2, Tester shall verify that the modified orders are stored in the patient record correctly and without omission, including

- medications
- laboratory
- radiology/imaging

DTR170.306.a – 3: Electronically Retrieve Orders in an Inpatient Setting

Required Vendor Information

- As defined in DTR170.306.a – 1, no additional information is required

Required Test Procedure:

TE170.306.a – 3.01: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and display the orders the Tester entered during the DTR170.306.a – 1: Electronically Record and Store Orders test for medications, laboratory, and radiology/imaging

TE170.306.a – 3.02: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the order data display correctly and without omission

Inspection Test Guide:

IN170.306.a – 3.01: Using the data in the NIST-supplied Test Data set TD170.306.a – 1, Tester shall verify that the order data entered during the DTR170.306.a – 1: Electronically Record and Store Orders test display correctly and without omission, including

- medications
- laboratory
- radiology/imaging

TEST DATA

Test data is provided by NIST in this Test Procedure to ensure that the functional and interoperable requirements identified in the criteria can be adequately evaluated for conformance, as well as to provide consistency in the testing process across multiple ONC-Authorized Testing and Certification Bodies (ATCBs). The NIST-supplied test data focus on evaluating the basic capabilities required of EHR technology, rather than exercising the full breadth/depth of capability that installed EHR technology might be expected to support. The test data is formatted for readability of use within the testing process. The format is not prescribing a particular end-user view or rendering. No additional requirements should be drawn from the format.

The Tester shall use and apply the NIST-supplied test data during the test, without exception, unless one of the following conditions exist:

- The Tester determines that the Vendor product is sufficiently specialized that the NIST-supplied test data needs to be modified in order to conduct an adequate test. Having made the determination that some modification to the NIST-supplied test data is necessary, the Tester shall record the modifications made as part of the test documentation.
- The Tester determines that changes to the test data will improve the efficiency of the testing process; primarily through using consistent demographic data throughout the testing workflow. The tester shall ensure that the functional and interoperable requirements identified in the criterion can be adequately evaluated for conformance and that the test data provides a comparable level of robustness.

Any departure from the NIST-supplied test data shall strictly focus on meeting the basic capabilities required of EHR technology relative to the certification criterion rather than exercising the full breadth/depth of capability that installed EHR technology might be expected to support.

The Test Procedures require that the Tester enter the test data into the EHR technology being evaluated for conformance. The intent is that the Tester fully control the process of entering the test data in order to ensure that the data are correctly entered as specified in the test procedure. If a situation arises where it is impractical for a Tester to directly enter the test data, the Tester, at the Tester's discretion, may instruct the Vendor to enter the test data, so long as the Tester remains in full control of the testing process, directly observes the test data being entered by the Vendor, and validates that the test data are entered correctly as specified in the test procedure.

TD170.306.a – 1: Record and Store Orders in an Inpatient Setting

TD170.306.a – 1.1: Medication Orders

- Zestril (lisinopril) 30 mg tablet by mouth daily
- Cefzil (cefprozil) suspension 250 mg by mouth every 12 hours
- Colace (docusate) 100 mg capsule by mouth 2 times per day
- HydroDiuril (hydrocholorothiazide) 25 mg tablet by mouth 2 times per day
- Klor-Con (potassium chloride) 10 mEq tablet by mouth 2 times per day
- Gentamicin (gentamicin sulfate) 200 mg intravenous piggy back every 6 hours

- Vancomycin (vancomycin hydrochloride) 500 mg intravenous piggy back every 12 hours
- Darvocet-N (propoxyphene napsylate and acetaminophen) 100 mg tablet by mouth every 4 hours as needed for pain
- Tylenol (acetaminophen) 325 mg tablet by mouth every 4 hours for fever greater than 38.3 C

TD170.306.a – 1.2: Laboratory Orders

- Complete Blood Count w/ Differential (CBC), routine
- Urinalysis, routine
- Glucose Tolerance Test, routine
- SGOT in AM
- Blood cultures STAT times 3 for temperature greater than 103° F

TD170.306.a – 1.3: Radiology/Imaging Orders

- Chest X-ray PA and Lateral, routine, indication: post-lung resection
- MRI of Thorax without contrast, STAT, indication: trauma
- CT Scan of Brain with and without contrast, ASAP, indication: severe traumatic brain injury
- KUB 1 view, routine
- Ultrasound of Left Breast, routine, indication follow-up to mammogram

TD170.306.a – 2: Modify Orders in an Inpatient Setting

TD170.306.a – 2.1: Medication Orders

Discontinue the Zestril order
Change the Cefzil order from 250 mg every 12 hours to **500 mg every 24 hours**
Change the Colace order from 2 times per day to **daily**
Change the Vancomycin order to **Vancocin (vancomycin hydrochloride) 250 mg capsule by mouth every 6 hours**

Revised Medication Orders List

- Cefzil (cefprozil) suspension **500** mg by mouth every **24** hours
- Colace (docusate) 100 mg capsule by mouth **daily**
- HydroDiuril (hydrocholorothiazide) 25 mg tablet by mouth 2 times per day
- Klor-Con (potassium chloride) 10 mEq tablet by mouth 2 times per day
- Gentamicin (gentamicin sulfate) 200 mg intravenous piggy back every 6 hours
- **Vancocin (vancomycin hydrochloride) 250 mg capsule by mouth every 6 hours**
- Darvocet-N (propoxyphene napsylate and acetaminophen) 100 mg tablet by mouth every 4 hours as needed for pain
- Tylenol (acetaminophen) 325 mg tablet by mouth every 4 hours for fever greater than 38.3 C

TD170.306.a – 2.2: Laboratory Orders

Change the CBC order from routine to **ASAP**
Discontinue the Urinalysis order

Revised Laboratory Orders List

- Complete Blood Count w/ Differential (CBC), **ASAP**
- Glucose Tolerance Test, routine
- SGOT in AM
- Blood cultures STAT times 3 for temperature greater than 103° F

TD170.306.a – 2.3: Radiology/Imaging Orders

Change the Chest X-ray PA and Lateral to **Chest X-ray PA**
Cancel the Ultrasound of Left Breast

Revised Radiology/Imaging Orders List

- **Chest X-ray PA**, routine, indication: post-lung resection
- MRI of Thorax without contrast, STAT, indication: trauma
- CT Scan of Brain with and without contrast, ASAP, indication: severe traumatic brain injury
- KUB 1 view, routine

CONFORMANCE TEST TOOLS

None

Document History

Version Number	Description	Date Published
0.8	Original draft version	March 22, 2010
1.0	Updated to reflect Final Rule	July 21, 2010
1.0	Updates include: • removed “Pending” in header • updated medication from Esidrix to HydroDiuril	August 13, 2010